

# FLIGHT

*The*  
AIRCRAFT  
ENGINEER  
&  
AIRSHIPS

First Aero Weekly in the World

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

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## Flight

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### DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:—

1926	
April 8	Marchese de Pinedo, "A 35,000 Miles Flight," before R.Ae.S.
April 13	Lieut. Lawrence A. Wingfield, M.C., D.S.O. "Some Reminiscences of Ten Years Ago," before Inst.Ae.E.
April 21	Inst.Ae.E. visit to Messrs. D. Napier and Son, Acton.
April 22	Capt. G. T. R. Hill. "The Tailless Aeroplane," before R.Ae.S.
April 29	Lieut.-Col. V. C. Richmond. "Results of Recent Airship Flight Tests," before R.Ae.S.
May	Gordon-Bennett Balloon Race.
May 11	Capt. W. H. Sayers. "The Modern Theory of Aerofoils and its Application to Aeroplane Design," before Inst.Ae.E.
May 19	Inst. Ae.E. visit to the National Physical Laboratory, Teddington.
June 12	Inst. Ae.E. visit to Croydon Aerodrome.
July	German Seaplane Competition at Warnemünde.
Aug.	Light Aeroplane Competition.
Oct. 24	Schneider Cup Race at Norfolk, Virginia, U.S.A.

## EDITORIAL COMMENT.



ONCE more, after a period of comparative inactivity, work is to be resumed on the various air routes in Europe, and a new "season" is about to commence. Whether the coming summer will see any real advance towards the ultimate goal of all air lines—the ability to pay without government subsidies—will depend upon how the problems are attacked, and upon the foresight shown by those responsible for the development and operation of the line, no less than for the formulation of policies. Theoretically at any rate, the main problems may be said to have been realised, and it now remains to be proved by practical tests whether or not the theories are correct. The whole subject of commercial aviation has been summarised in the following three desiderata, placed in order of importance: Reliability, Safety, and Economy. Like all summaries, this is not sufficiently exhaustive, and is therefore, to some extent, inaccurate, but it does appear to cover under three main heads the objects which should be kept in view in striving towards real commercial aviation.

Concerning the first head—Reliability, of recent years there appears to be a large volume of opinion which maintains that this can be obtained primarily by good ground organisation, and secondly by using aircraft provided with multiple engines, the number generally thought to form the best compromise between reasonable fuel economy and absence of forced landings being three. As regards the three-engined machine, there appears to be safety in numbers, only if two of the three engines are capable of keeping the machine aloft. This naturally means that the power reserve must be at least one-third of the total, and on this subject there is another school of thought which believes that if a single-engined machine has a similar surplus of power, it will enjoy the same immunity from forced landing as the three-engined machine, while being likely to be more efficient. However that may be, the three-engined "school" seems to hold the stage at the moment,

and it is known that as far as our own air line company, Imperial Airways, is concerned, an effort is to be made to develop that type, of which several are on order. In the meantime, a batch of twin-engined machines has just been delivered with which work will, presumably, be carried on until the three-engined machines are ready. This seems somewhat illogical, since theory appears to indicate that the twin-engined machine is rarely able to fly with one of its engines stopped (although types are in existence, and flying, which will definitely keep aloft on one engine), in which case the twin-engined machine should be in no better case than the single-engined as regards absence of forced landings. We thus have the case of a company which professes to believe the three-engined machine the correct type, but which yet embarks upon another summer's programme with but one or two machines of that type, and is, apparently, content to purchase *new* machines which are not of this type. It is certainly at least two years ago that theoretical considerations indicated that the three-engined machine should give immunity from forced landings, and that the twin-engined could not be counted upon to do this. Thus it cannot be claimed that the need for the three-engined machine had not been foreseen. And yet we are still manufacturing twin-engined types. We have nothing against this type, but if it is agreed that it does not promise to do what is required, surely it is illogical to go on building it.

The second desideratum—Safety—can be said to have been attained to a very pronounced degree already, and is to a great extent bound up with that of reliability, the factors making for reliability also largely tending towards safety. There is this difference, however, that whereas machines may be of such a type that they can be landed in almost any field with perfect safety, if such forced landings are frequent, the machines will naturally not be reliable, and the running of a scheduled service will be impossible. So it is seen that although the two desiderata have a good deal in common, they are not synonymous. On the other hand, a machine which will never have to make a forced landing, and will always be able to reach its destination, may be regarded as a safe machine also, so that in aiming at reliability one more or less automatically attains safety.

The third object to be attained—Economy, is a somewhat vague term, and is very difficult to define as regards commercial aviation. To some extent it is antagonistic to the other two, calling for the inevitable compromise. Yet accepted in its widest sense it should be capable of attainment without undue sacrifice of reliability and safety. Immediately the word economy is mentioned, the mind is apt to jump, where aircraft is concerned, to the subject of paying load per horse-power. While this is undeniably a most important feature, there are other ways in which the economy of an air service can be improved. By way of an illustration, we may take a purely hypothetical case of a service run from a big city in one country to a big city in another country, the machines used being of large capacity and fairly economical as regards paying load per horse-power, if the machines are flying with full load. If, for the purpose of argument, it is assumed that the service is run but once a day, and that the departure is so timed that passengers do not reach their destination at a useful hour, the result will almost certainly be that but

few will use the air service. The machine will therefore be flying with only half load, and its "economy" is thrown away.

Let it now be supposed that instead of the very large "economic" machine flying once a day with small load, a smaller type were chosen, and an hourly service between the two cities were run. Then passengers could go to the aerodrome any hour of the day and be certain of not having to wait very long for a machine to leave. There would, in other words, be a departure to suit every need, and many more would use the air line. Even, therefore, if the smaller machines were less "economical" in the matter of paying load per horse-power, they might easily, and probably would, be better than the large one flying with half load, quite apart from the fact that a very much greater number of people would travel by air, and that consequently the charges per passenger mile due to ground organisation would be reduced.

It is for reasons such as these that we are not at all sure that the new subsidy basis of "horse power mileage" is likely to lead to greater efficiency, since it would seem to encourage the large machine making few trips rather than the smaller machine making many trips. This very problem enters into the question of the new three-engined machines, and it seems likely that in aiming at machines with 1,100 h.p. or so, we are committing ourselves too much to the horse-power mileage fetish. The three-engined machine is almost universally agreed to be the right type, but it does not follow that we must necessarily concentrate upon the *large* three engined machine. On the contrary, we believe that quite a useful service could be operated by three-engined machines with a total power of 350-450 h.p. The almost instant success in America of the Fokker three-engined monoplane fitted with engines of 200 h.p. each is an example of the usefulness of the small three-engined type, and we believe that even smaller three-engined machines would be suitable on certain routes.

Closely allied with the subject of economy in commercial aviation is the choice of routes, and it is, perhaps, in this direction that there is the greatest scope for improvement, at any rate, as far as British commercial aviation is concerned. If we are really to make a success of our air lines we must get beyond the London-Paris stage. Great Britain is somewhat unfavourably situated from an aviation point of view, and it is an unfortunate fact that we must ask the permission of other nations for nearly the whole of our commercial air work. This is regrettable, but it is a fact which must be faced, and the sooner we can come to an amicable arrangement with Germany, the sooner are we likely to make real progress with British air lines in Europe. Germany is about to launch what may be termed a "spring offensive," and the new German air line company, the *Deutsche Lufthansa* is planning no less than 39 lines in Germany. It may reasonably be asked what are we going to do. London-Paris does not provide any adequate answer to such a network of lines, and it would appear that, failing an agreement with Germany, our only hope is to put every effort into the development of Imperial British commercial aviation. The new Cairo-Karachi line is a step in the right direction, but this is not to begin operations this year, and in the meantime others are forging ahead. Even in the Dominions we are being ousted by foreign competition. Unless we bestir ourselves the outlook is far from bright.





[FLIGHT Photographs]

CHRISTENING NEW MACHINES FOR IMPERIAL AIRWAYS: The upper photograph shows the crowd inspecting one of the Handley Page W.10's. In the inset Lady Maud Hoare is seen performing the christening ceremony by "unveiling" the name plate of one of the machines, and the lower photograph shows the giving of a hearty cheer for Lady Maud Hoare, the group including Lieut.-Col. Barrett-Lennard, Sir S. Instone, Mr. Hubert Scott Paine, Air Vice-Marshal Sir Vyell Vyvyan, Sir S. Hoare, Mr. Larkin, Lady Maud Hoare, and Sir Eric Geddes.

# IMPERIAL AIRWAYS' NEW AIR FLEET

## Lady Maud Hoare Performs the Christening Ceremony

It was certainly a sign of the times—as far as British civil aviation was concerned, at any rate—when Lady Maud Hoare, the wife of Sir Samuel Hoare, Secretary of State for

Imperial Airways, Ltd. These were all multi-engined machines—Handley Page's—and they form the first of an entirely new fleet of air liners which Imperial Airways are



[FLIGHT Photograph

**NEW AIR LINERS FOR I.A.L. :** One of the Handley Page W.10's making a flight at Croydon, among the passengers carried being Sir Samuel Hoare, Secretary of State for Air, Lady Maud Hoare, and Mr. P. C. Larkin, High Commissioner for Canada.

Air, performed an interesting and picturesque ceremony at Croydon aerodrome on March 30. This was the christening of five new machines which are to be put into service by

forming in connection with their new policy of employing multi-engined machines only—except for certain duties, where a few single-engined machines will be used and have



[FLIGHT Photograph

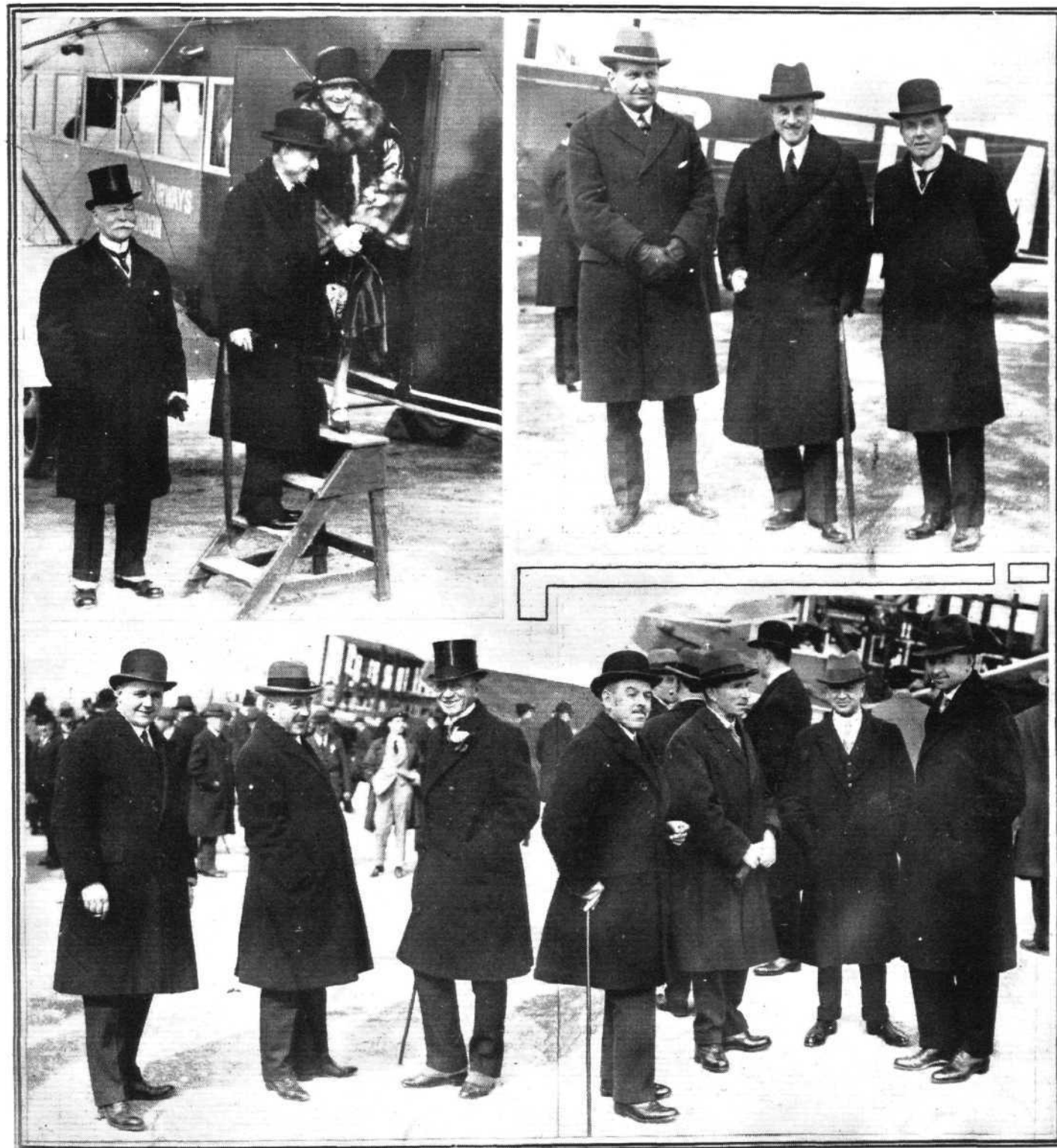
**NEW MACHINES FOR IMPERIAL AIRWAYS :** Last week a batch of Handley Page machines of the W.10 type, each fitted with two Napier "Lion" engines, were delivered to Imperial Airways at Croydon, the event being the occasion of a visit to the aerodrome by a number of prominent people. Our photograph shows the machines lined up for inspection.

been retained accordingly. In short, to all intents and purposes, the single-engined air liner of Imperial Airways has completed its reign of office, and has retired with honour, having fulfilled its strenuous duties of pioneer work in a praiseworthy fashion indeed.

The five machines in question consisted of one Handley Page "Hampstead," which is fitted with three 385-h.p. Siddeley "Jaguars," and four Handley Page W.10's, each

Armstrong-Whitworth machines, with their "Jaguar" engines, will be added to Imperial Airways' fleet shortly) is another innovation adopted by Imperial Airways.

The four W.10's on their journey from Cricklewood to Croydon carried a number of well-known passengers, including Maj.-Gen. Sir F. Sykes and Lady Sykes, Viscount Curzon, Col. and Mrs. J. T. C. Moore-Brabazon, Air Vice-Marshal Sir W. Geoffrey M. Salmond, Air Vice-Marshal Sir Vyell



[Flight Photograph

**PROMINENT PERSONALITIES AT CROYDON:** The photograph in the upper left-hand corner shows Mr. Larkin, High Commissioner for Canada, Sir S. Hoare and Lady Maud Hoare emplaning in a Handley Page W.10. On the right are seen Mr. Handley Page, Sir S. Hoare, and Sir Charles Wakefield. Below, from left to right: Major Bishop, Mr. H. T. Vane, Sir Harry Brittain, M.P., Mr. John Lord, Mr. C. C. Walker, Admiral Mark Kerr, and Mr. T. O. M. Sopwith.

fitted with two 450-h.p. Napier "Lion" engines. All were 1-seaters, the "Hampstead" having already been put into service, while the W.10's were new machines and were only flown over to Croydon from Cricklewood on the morning of the ceremony. It is of interest to note here that the employment of air-cooled engines as standard equipment (some

Vyvan, Lieut.-Col. F. McClean, Lieut.-Col. J. Barrett-Lennard, Lieut.-Col. A. E. Edwards, Mr. Bertram, Mr. H. Scott-Paine, and Mr. and Mrs. F. Handley Page. Mrs. Handley Page, it may be mentioned, made her first flight in an aeroplane on this occasion! The four machines flew in formation, skirting the west of London, and when they



arrived at Croydon, where a large crowd had gathered to witness the ceremony, the occupants were received by Sir Eric Geddes, chairman of Imperial Airways, Sir Samuel Hoare and Lady Hoare, and Sir Philip Sassoon. The four machines lined up alongside the three-engined Handley Page "Hampstead" and three H.P. W.8's—the forerunners of the new W.10's.

Then Lady Maud Hoare performed the christening ceremony, which was somewhat of a novel character. Lady Maud stood beneath the nose of the first machine—a W.10—suspended from which was a silken rope, which she pulled and thus ripped a superimposed square of fabric away from the fuselage. This exposed to view the name of the machine—"The City of London"—and simultaneously a flight of homing pigeons were released from the cockpit, and, after circling overhead, the birds flew off home with the glad tidings.

The three other W.10's were similarly christened "City of Pretoria," "City of Ottawa," and "City of Melbourne," while the "Hampstead" machine was christened "City of New York" in honour of the numerous American visitors who make use of Imperial Airways. The Hon. Peter Larkin, High Commissioner for Canada, personally asked Lady Maud to pull the rope when christening "The City of Ottawa." As she named each machine, Lady Maud wished it "God speed." Some of the visitors, including Sir Samuel and Lady Hoare, were then taken up for a flight.

After the christening ceremony a large party of guests were entertained at luncheon at the Aerodrome Hotel. Proposing the health of the guests, Sir Eric Geddes said that civil aviation was in its infancy, but small as it was, British aviation was not a discreditable member of the family. In the two years of its existence, Imperial Airways, starting with a nondescript fleet, had now 75 per cent. of one type and 25 per cent. of another type of craft—thus achieving a simpler basis of operation—and had flown 1,750,000 miles and had carried 23,000 passengers, in perhaps the worst climatic conditions in the civilised world. For more than a year they had maintained a 100 per cent. safety. These figures were



#### Mr. S. H. Evans' Paper

THE paper, "The Performance of Modern Aircraft—with special reference to the Variable Wing," which Mr. S. H. Evans was to have read before the Inst. of Aeronautical Engineers on April 13, has been postponed, but instead, Lieut. Lawrence A. Wingfield, M.C., D.S.C., will read a paper on "Some Reminiscences of Ten Years Ago." The lecture will be non-technical and open to all—ladies included.

#### Danish Flight to Tokyo

THE two Danish pilots, Lieuts. Botved and Husekend, who are flying from Copenhagen to Tokyo—in two Fokker C.V. 'planes (400 h.p. Lorraine Dietrich engines) and not

accomplished with remarkable regularity considering the difficulties and he wished to give credit to the pilots and staff for that result. The new machines christened that morning were not, he said, the end of their progress, and they had other machines coming which would, he hoped, mark a further step forward.

Civil flying, he stated, must be regular and steady; the "taxi-business" to European capitals was not Empire aviation, and the Cairo to Karachi service, which was to be started with 3-engined machines within 12 months, would be the first link in the Empire air chain. The service to India would at first be once a fortnight, but once they had proved that it could be carried out regularly, he hoped India would insist upon it being a weekly service. He further hoped that it would eventually be extended to Australia, while he was confident the air route to the Cape would be regularly flown.

Sir Samuel Hoare, in responding, referred to the pioneer work done by Mr. Handley Page. He thought that, although Imperial Airways had only been in existence for two years—and organised civil air lines for five or six years—very substantial progress had been made. One Imperial Airways pilot had already made 3,000 cross-channel flights, he was informed. The present stage marked the passage from the small single-engined machine to the multi-engined machines, which were intended primarily for the Continental routes. It was not so much the development of these short distance routes to the Continent that they were aiming at—valuable and important as they were—but the far greater development of air routes from one part of the Empire to another. He hoped that these new machines which had been named after the chief cities of the Empire, would carry, not bombs and torpedoes, but a message of peace and goodwill. He wished more than that—that they would prove to be the forerunners of great Empire air routes, along which machines would pass regularly and safely from the capital of the Empire to the chief cities of the Dominions, and from the chief cities of the Dominions to London, and would carry between the Dominions and ourselves a message of business solidarity, of political unity, and of family affection.



Junkers machines as previously reported—have been making good progress. On March 31 they reached Calcutta, and continued on to Rangoon on April 3. Proceeding next day, Lieut. Botved reached Bangkok, but his companion crashed *en route*, but escaped unhurt.

#### Brussels-Congo-Brussels

LIEUT. MEDAETS, with Lieut. Verhaegen and Adj. Coppens, who recently made a successful flight from Brussels to Kinshasa, started on the return journey on March 29, and flew as far as Mongalla (about 1,550 miles). On April 2 they made a 9 hours flight on to Atbara, and continued the flight as far as Cairo on April 4. They left Cairo for Athens on April 6. Good going!



**ALL BRITISH FOR ARGENTINA :** A group of Avro type 504K biplanes, fitted with 100 h.p. Bristol "Lucifer" engines, which have been supplied, through the agency of Vickers, Ltd., by A.D.C. Aircraft, Ltd., to the Argentine Government.

# THE SIDDELEY "JAGUAR'S" 17,000 MILES

## A Triumph for the Air-Cooled Engine

THE wonderful performance of the Armstrong-Siddeley "Jaguar" engine, which Mr. Alan Cobham used on his London-Cape Town-London flight, has undoubtedly emphasised the remarkable advance that has been made of late in the design of the air-cooled engine. In fact, there are now many people who are of the opinion that the air-cooled engine is the engine of the future as far as aircraft are concerned—and recent performances of this type of engine have certainly demonstrated that many of the objections associated with it are unfounded, and that it is well able to hold its own in competition with its water-cooled rival. This is an important point, for, of course, under certain conditions the air-cooled engine possesses considerable advantages.

When Mr. Cobham's "Jaguar" was stripped down and measured up by the Aircraft Inspection Department of the Air Ministry, the greatest amount of wear discovered in any part was but 0.002 in.—the thickness of a hair, in fact. In such vital parts of the engine as the pistons, piston rings, gudgeon pins, cylinders, master rings and bushes, crankshaft,

plexity of the problem that faces the aero engineer begins to be realised. To this must be added the fact that there is a constant call for still more power, coupled with a demand for a reduction in weight, an achievement which in the case of the "Jaguar" engine enabled Cobham to take off from some of the high altitude African aerodromes where previous attempts had met with disaster.

The report of the official A.I.D. inspection of Armstrong-Siddeley "Jaguar" engine No. 8010, used by Alan Cobham in the D.H.50 is as follows:—

*Pistons.*—No wear. All gudgeon pin bosses O.K.

*Grooves.*—O.K. No cracks. No wear on diameters.

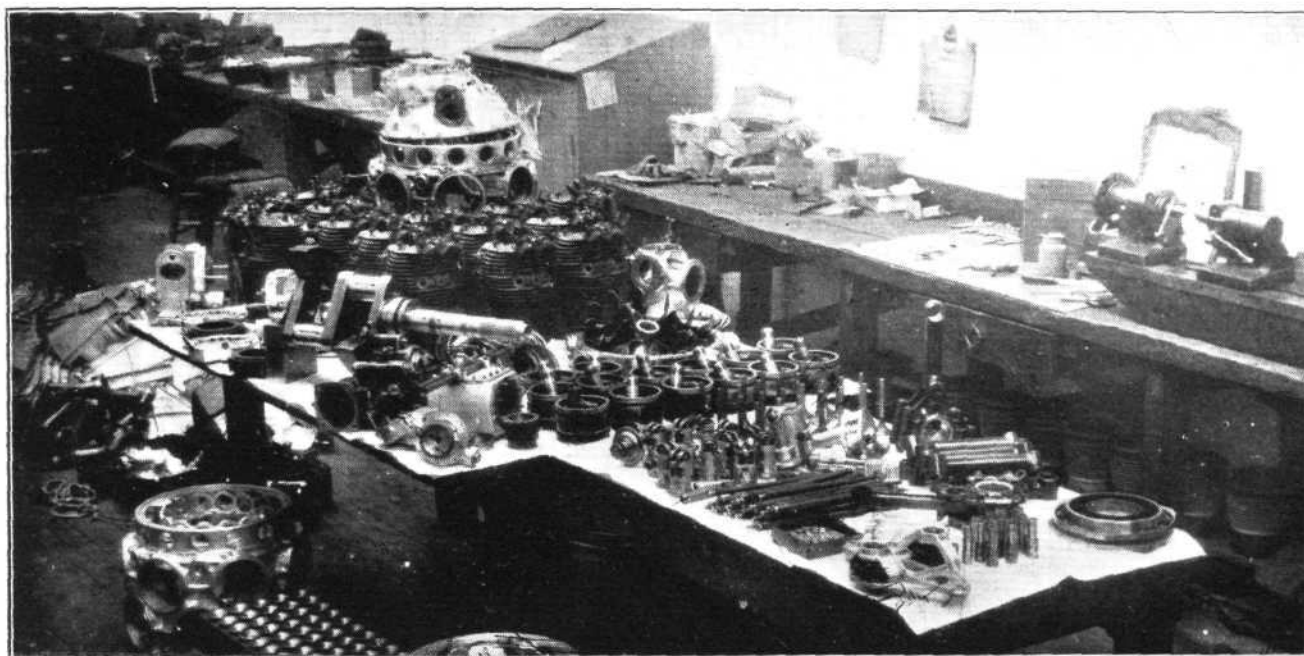
*Piston rings and scraper rings.*—No wear and still within limits of strength.

*Gudgeon pins.*—O.K. to limits. No traceable wear.

*Gudgeon pin bushes.*—Bores O.K. No wear. Outside diameter worn from 0.000½ in. to 0.002 in.

*Cylinders.*—No wear.

*Inlet valves.*—Seats very good. Stem diameter no wear.



**17,000 MILES AND FIT FOR MORE:** The component parts of the Siddeley "Jaguar" engine used by Mr. Alan Cobham on his 17,000-mile flight from London to Cape Town and back laid out for inspection by the A.I.D. The latter's report, given in the accompanying article, shows that the engine is in remarkably good condition, and that the amount of wear is "infinitesimal."

crankshaft bearings, anchor pins and tappet rollers, it was impossible to detect any wear whatever, while in many other parts the production limits for a new engine were not even exceeded.

An examination of the engine parts, which we were able to inspect the other day, bears out the A.I.D. official report, which accompanies this article. The freedom of the cylinder heads from carbon deposit is a notable tribute to the efficiency of aircooling, as is the excellent condition of the valves and valve seats. That fundamentally vital part, the white metal lining of the master ring, is in perfect condition, while the wonderful appearance of the pistons and the excellent fit and condition of the rings are prominent points.

These results would have been remarkable enough for a series of straight flights in Europe, but when it is remembered that the engine which was hauling a load of 4,400 lbs. was deluged for hours in African rain and sandstorms, and was frequently pegged out for the night under almost barbaric conditions, the infinitesimal amount of wear that is shown in the report is little short of miraculous. It proves, of course, the tremendous strides that have been made not only in the designing of the parts themselves and in the provision made for their protection and lubrication, but also the advance that has been made in the selection and treatment of the most suitable material.

Furthermore, when it is remembered that the modern aero engine may be called upon to operate in temperatures varying from 115° F. to 90° below freezing point, the com-

*Exhaust valves.*—Seats very good. Three valve stems only show wear of 0.00½ in., and this only on a period of half length.

*Inlets guides.*—Two valve guides worn. Rest O.K.

*Exhaust guides.*—Two valve guides worn. Rest O.K.

*Master ring.*—No traceable wear.

*Master ring bushes.*—Diameter of bushes O.K.

*Auxiliary connecting rods.*—Eleven O.K. No wear. One oval in large bore by 0.00025 in.

*Anchor pins.*—These are O.K. No wear.

*Anchor pin bushes.*—Inside diameters O.K. Outside diameters worn 0.0005 in.

*Crankshaft.*—No wear.

*Tappets and guides.*—No wear.

*Tappet rollers.*—O.K.

*Tappet roller pins.*—Wear 0.0002 in.

*Main crankshaft bearings.*—Condition excellent. No wear on races. Wear on rollers 0.00025 in.

*Note.*—The engine, when tested on the bench at the conclusion of the flight, was found to be in perfect running order, and showed no loss in power throughout the range of the power curve.

The fuel consumption varied between 0.56 to 0.58 pint per brake horse-power per hour and the oil consumption was 6 pints per hour.

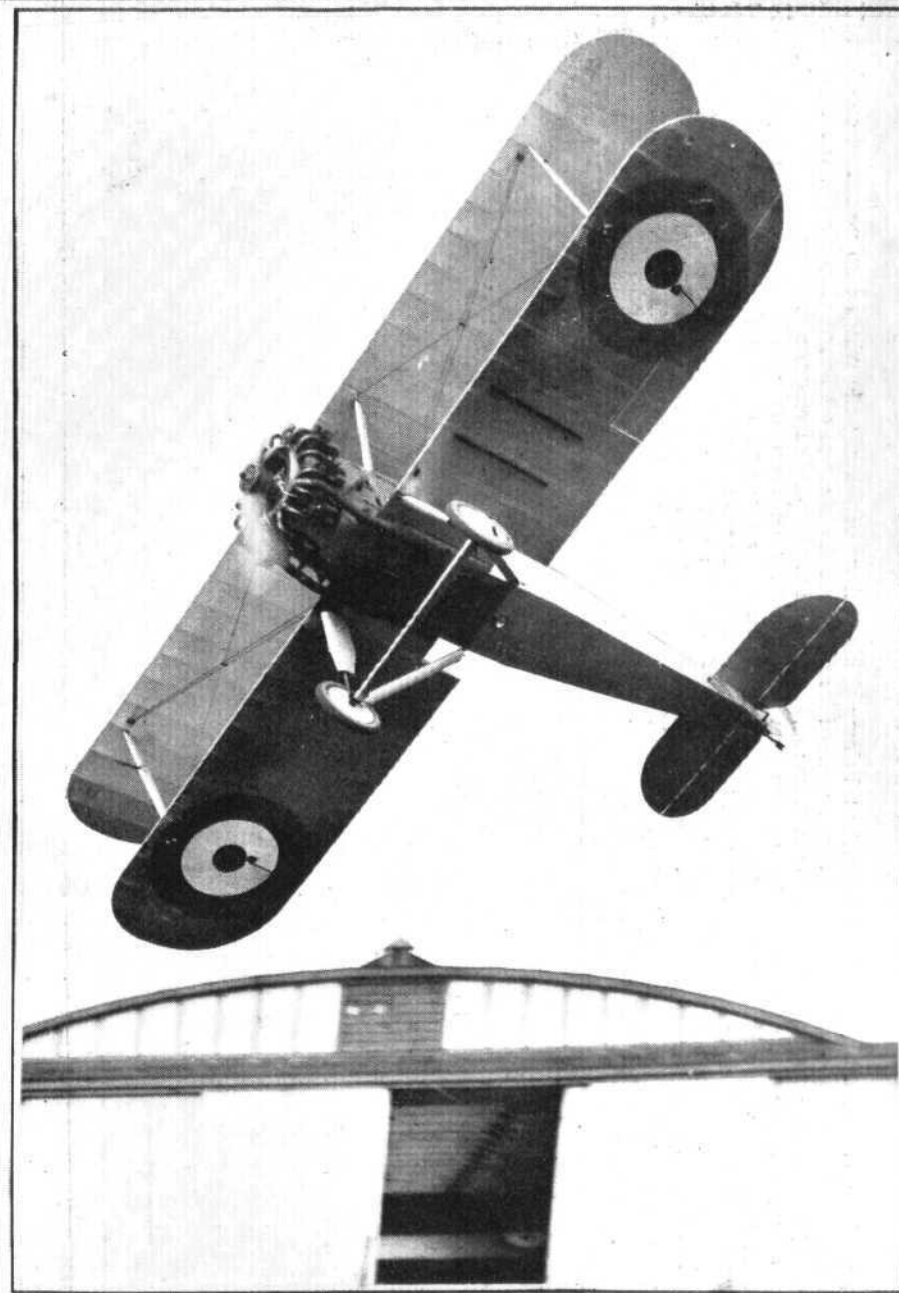
As will be seen from the above figures the engine is in remarkable condition, and the amount of wear that has taken place is infinitesimal.



[*"FLIGHT"* Photograph

**MANŒUVRABILITY:** The Hawker "Woodcock" with Bristol "Jupiter" engine doing a steeply-banked turn close to the ground near the Hawker sheds at Brooklands. The pilot was Mr. Bulman, chief test pilot to the H. G. Hawker Engineering Company.





UPS AND DOWNS: Two views of the Hawker "Woodcock," piloted by Mr. Bulman, flying at Brooklands. When the photograph on the left was taken the machine was doing a banked left-hand turn close to the ground, our photographer enjoying a point of vantage above the machine.

# THE BUHL-VERVILLE CW-3

## An American Commercial Biplane

THE new American commercial aeroplane described below is the latest product of the Buhl-Verville Aircraft Co., of Detroit, Mich., and it has been designed by Mr. Verville, who is one of the pioneer aeroplane designers of America and has been responsible for several successful machines built in that country during the past ten years or so. Until recently Mr. Verville has been in charge of the racing and pursuit design section of the Air Service Engineering Division at McCook Field, where he directed the design of the U.S. Verville-Sperry messenger 'plane, the D.9, the Verville-

This feature of folding the wings also possesses considerable advantage for storage on board ship should the machine be required for shipboard reconnaissance work.

One pair of steel tube N-inter-plane struts each side separate the top and bottom planes, whilst the top plane centre section is supported above the fuselage by six tubular struts with diagonal bracing struts for the front members. The lower plane wing butts are braced to the fuselage by tubular struts with streamline fairings. Ailerons are fitted to both upper and lower planes.

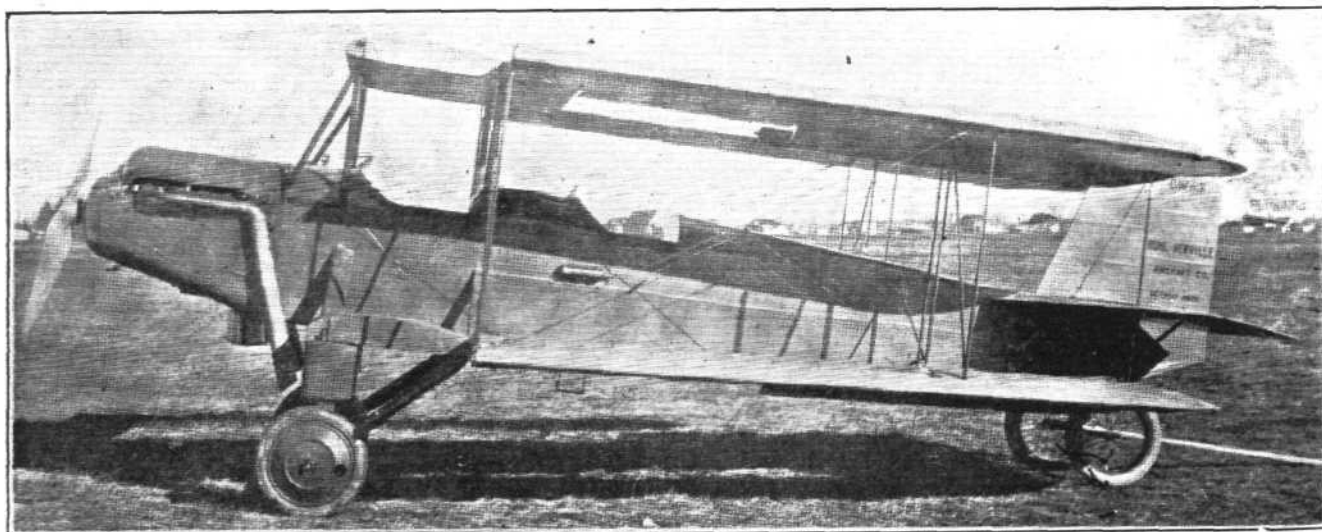


**THE BUHL-VERVILLE CW-3 : An American commercial biplane, fitted with a 90 h.p. Curtiss Ox-5 engine, in which steel-tube construction is largely employed.**

Packard racer, the Verville-Sperry racer, the U.S. D.4 ambulance 'plane, the V.C.P.1 and the P.W.1 pursuit 'planes.

The CW-3 is a strong, serviceable and efficient tractor fuselage biplane, combining design features which facilitate its adaptability to the following types of service—passenger carrying, light freight carrying, aerial photography, crop-dusting, and training. Furthermore, it is designed with a degree of ruggedness and strength compatible with the classes of work for which it is intended. Provision is made whereby almost any power plant between 100 and 200 h.p.

The tail unit consists of a horizontal stabilizer, vertical fin, rudder, and divided elevator, all of which are of welded steel tube construction, fabric covered. The two elevator sections, and the rudder are all identical with each other, and the stabilizer is made up of two triangular halves bolted and braced on each side of the fuselage, and provided with angle adjustment, effected while the machine is on the ground. Special adjustment is likewise provided for the fin for the purpose of counteracting the airscrew-torque reaction. The stabilizer is braced, on its under surface, to the bottom



**THE BUHL-VERVILLE CW-3 : Side view of the machine with the wings folded.**

may be installed, only simple changes being necessary since the engine mount is made detachable.

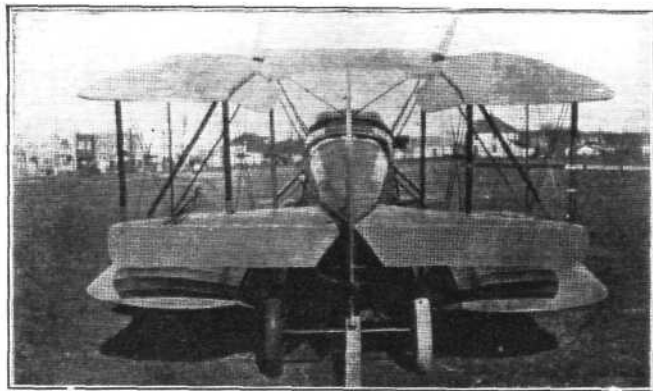
The wing cellule is of the biplane type without stagger or sweepback. Both upper and lower planes are interchangeable and are hinged to the upper centre section and lower wing butts respectively with fittings designed to allow the folding back of the wings in order to facilitate the storage of the machine within a restricted hangar space of approximately 9 ft. high by 13 ft. 6 in. by 25 ft. The operation of folding back the wings takes no longer than 15 minutes.

longerons of the fuselage by two streamline tubes, and, on its upper surface, to the upper extremity of the rudder post by two streamline wires. A large, quickly detachable metal inspection door is provided in the rear end of the fuselage for inspecting the tail skid, etc.

The fuselage is of steel tube construction, welded into an integral structure without any wire bracing of any kind, thus obviating the necessity of continual rigging and truing up. This construction adapts itself very well to repairs on the field, as any welding can be carried out with an oxy-acetylene

outfit, and the steel tubing employed is of an ordinary commercial size and grade which is readily obtainable in the open market.

Two cockpits are provided, one beneath the wings for the passengers and the other behind, aft of the wings, for the pilot. Both have comfortably upholstered seats, the passengers' cockpit measuring 2 ft. 11 in. wide, allowing ample accommodation for two sitting side by side. Between the two cockpits is a small tool and luggage compartment. Access



An end view of the Buhl-Verville CW-3, with wings folded—the overall width thus being 13 ft. 6 in.

to the front cockpit is facilitated by a triangular hinged door on the port side of the fuselage. If the machine is required for freight or crop-dusting work, the seats in the front cockpit can be removed, providing a space of about 23 cub. ft.

An instrument board, provided with an air-speed indicator, clock, altimeter, oil pressure gauge, radiator thermometer, switch, carburettor adjustments, &c., is provided in the pilot's cockpit. A parachute seat is fitted for the pilot, and a parachute can be worn in the front cockpit if desired.

The controls are of the stick and rudder bar type, dual control being optional, depending upon whether or not the machine is required for training purposes. The control is carried out by means of wire cables extending, in the case of the elevator controls, from the control column back to a countershaft in the after end of the fuselage, from the extremities of which extend the radius rods to the elevator horns. Attached to the rudder bar are two sets of cables, one set

extending back to the rudder, and the other set to the tail skid to facilitate ground steering while taxiing.

A wide-track axleless under-carriage is fitted, which not only reduces the resistance present in the ordinary axle type when taking off in long grass—and also lessens the chance of accident when landing under similar conditions—but the wide track makes for much smoother and safer landing, with less risk of damaging the wing tips in a bad landing. The shock absorbers are of the Oleo-rubber disc type, and under load the rubber discs are in compression, while an internal perforated plunger piston simultaneously travels into a loaded oil chamber at the lower end of the chassis strut. This absorbs the impact energy and neutralises the effect of the rebound so prevalent in the ordinary rubber sprung shock absorbers. It thus cushions the landing shocks to the extent of saving the whole aeroplane structure from the deterioratory effects occasioned by shocks in bad landing over rough ground.

The CW-3 model described herewith is equipped with a 90 h.p. Curtiss OX5 engine, housed in a quickly detachable cowling, and driving a Reed duralumin airscrew. The radiator is of the underslung type, located immediately under the engine and provided with shutters manually operated by the pilot during flight. A 40-gallon petrol tank, sufficient for 5 hours' flight, is located in the fuselage, immediately behind the engine, and the oil is carried in the bottom half of the engine crankcase. The petrol system is of the gravity feed type.

The main characteristics of the CW-3 are as follows:—

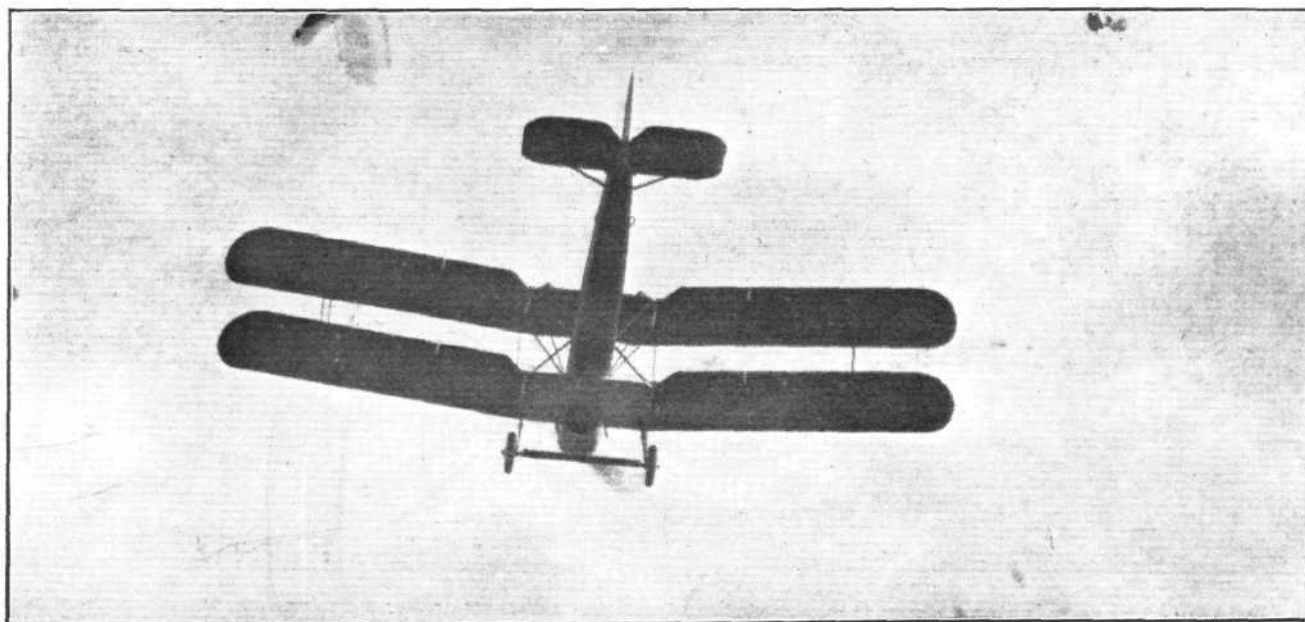
Span .. .. .	35 ft.
Overall length .. .. .	25 ft.
Width with wings folded .. .. .	13 ft. 6 in.
Height .. .. .	9 ft.
Wing area .. .. .	300 sq. ft.
Area of ailerons .. .. .	28 sq. ft.
Area of stabilizer .. .. .	21 sq. ft.
Area of elevators .. .. .	16.5 sq. ft.
Area of fin .. .. .	5.75 sq. ft.
Area of rudder .. .. .	8.5 sq. ft.
Weight empty .. .. .	1,380 lb.
Weight laden .. .. .	2,150 lb.
Speed range .. .. .	40-95 m.p.h.
Range of action (full throttle) .. .. .	5 hrs.
With 200 h.p. Wright "Whirlwind"—	
Weight empty .. .. .	1,415 lb.
Weight laden .. .. .	2,300 lb.
Speed range .. .. .	45-133 m.p.h.
Range of action (full throttle) .. .. .	3.5 hrs.
Climb (ground level) .. .. .	900 ft./min.

#### The Overseas League and Alan Cobham

THE Central Council and members of the Overseas League are entertaining Mr. Alan Cobham to luncheon at the Criterion Restaurant on April 16, at 12.45 p.m., when Sir Ernest Birch, K.C.M.G., will take the chair.

#### French Air Estimates

AN item of the Budget that has been under discussion in the French Chamber of Deputies was a supplementary estimate of 100,000,000 fr., representing the maximum for aeronautical construction for the current year.



The Vickers "Vendace" has been flying quite a lot at Brooklands recently. This view shows it flying overhead.



# ROYAL AIR FORCE FLIGHT CADETSHIPS

## Openings for a Flying Career

THE next examination of candidates for entry as flight cadets to the Royal Air Force Cadet College, Cranwell, in September, 1926, will begin on June 22. On this occasion not less than 35 cadetships will be offered. Forms of entry, which can be obtained from the Secretary, Civil Service Commission, Burlington Gardens, W.1, will not be accepted in any circumstances later than May 6.

All candidates must be fit and willing to fly and be between the ages of 17½ and 19½. With the exception of those nominated by the Air Council on the recommendation of headmasters, they are required to produce school certificates A or B, obtained by passing certain specified examinations, before their candidature is approved.

The examination is, in the main, a written one, and is held in London and at various other centres, but each candidate must also attend at Interview Board at the Civil Service Commission.

Successful candidates, after passing the Royal Air Force Medical Board, undergo a two years' course at the College, where, in addition to continuing their general education, they receive a thorough training in all questions concerning service aviation and cognate subjects, and graduate as pilots, on service aeroplanes.

On passing successfully out of Cranwell, flight cadets are granted permanent commissions. They have before them a life career with good prospects of rising by their own efforts to the highest ranks. There is no question of their compulsory retirement on the ground that they have become too old for service as pilots. The work offers great scope both in its military and in its technical aspects to young men of ability, and facilities are given to officers to specialise in engineering, wireless telegraphy, air gunnery and other subjects. The responsibilities of the Royal Air Force in India, Iraq, Palestine,

Egypt and the Mediterranean provide opportunities of serving abroad, but a tour of overseas service does not exceed five years.

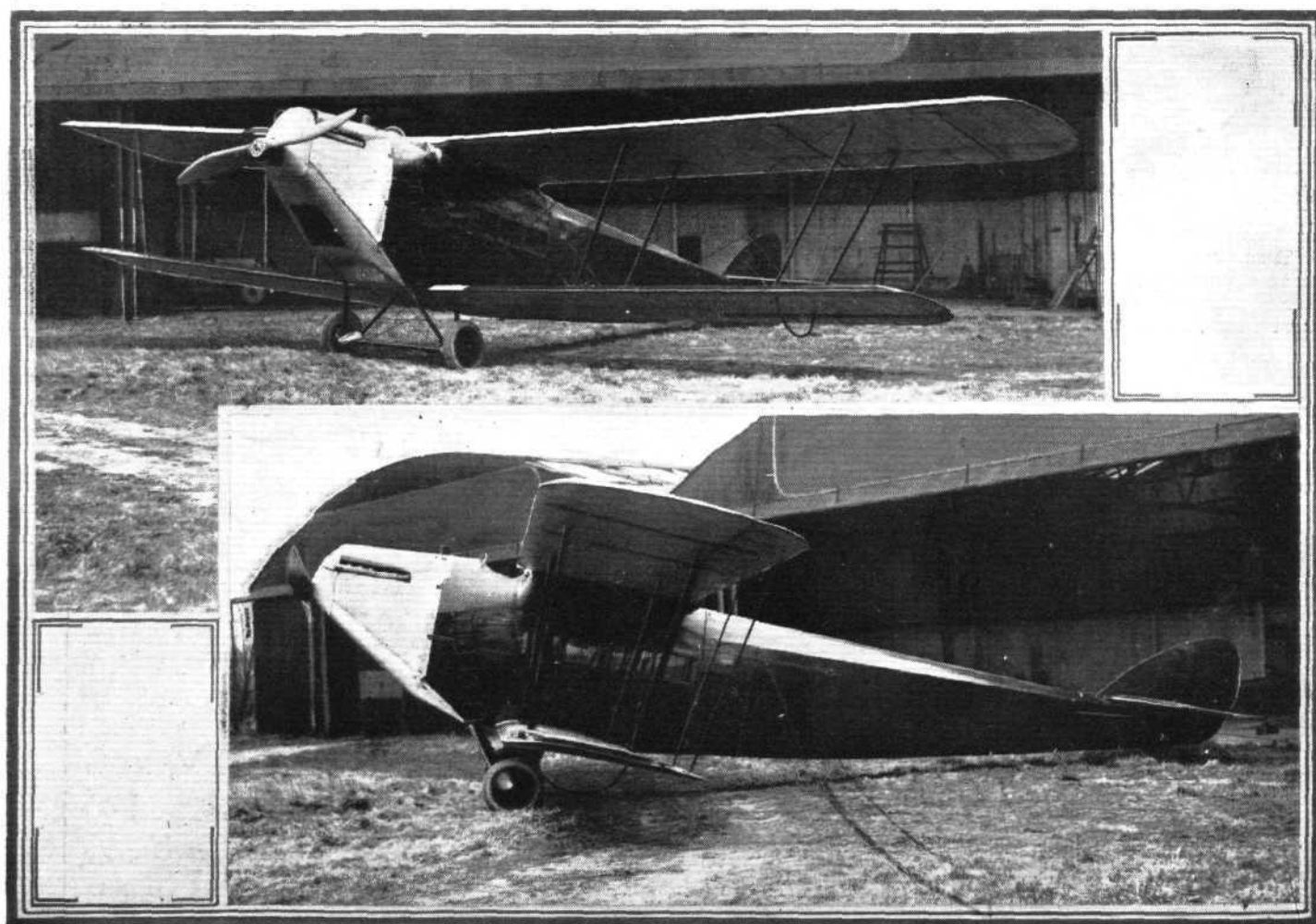
The total cost to a parent of putting his son into the Royal Air Force through Cranwell is about £250 for the two years' course. For flight cadets who are successful in obtaining prize cadetships or who are eligible for reductions in fees in respect of their father's service in the fighting forces, the total cost of the two years' training is considerably less.

On first commissioning as pilot officers at the age of 20 or 21, officers receive cash emoluments amounting at present rates to about £275 a year, in addition to free quarters, light, fuel, rations and part services of a batman, and need no further assistance from their parents. After 18 months' service they become eligible for promotion to the rank of flying officer with substantially increased rates of pay, the cash emoluments at present rate being about £344.

The Air Ministry considers that the career offered by the Air Force compares very favourably with that offered by any other profession, and they desire to emphasise that to take advantage of that career it is quite unnecessary to be possessed of private means. The expenses in Royal Air Force messes are strictly limited and officers even of the most junior rank should have no difficulty in living on their pay.

Full details as to entry into Cranwell are contained in Air Publication 121 "Regulations for admission to the Royal Air Force Cadet College" (price 6d. net) and more general information as to the career offered by the Royal Air Force is provided in an official handbook entitled "The Royal Air Force as a Career" (price 3s.).

These publications can be obtained through any bookseller or direct from H.M. Stationery Office, Kingsway, W.C.2.



THE ANEC III : These two views show the new biplane built for Australia by the Air Navigation and Engineering Co., of Addlestone, Surrey. The machine, which was described and illustrated in FLIGHT of February 11, 1926, has now been completed, and a few test flights have been made at Brooklands. The engine is a Rolls-Royce Eagle VIII.

## CORRESPONDENCE

*The Editor does not hold himself responsible for opinions expressed by correspondents. The names and addresses of the writers, not necessarily for publication must in all cases accompany letters intended for insertion in these columns.*

### CIVIL MARINE AIRCRAFT

[2132] With reference to the tables you publish on page 181 of your issue of March 25th, and the explanatory remarks overleaf, I shall be grateful if you will permit me to amplify the reference to power-loading. In my paper I wrote "The horse-power loading is a consideration of extreme importance. This was where the early flying-boats failed; they were attempting more than could reasonably be expected. Seaplanes loaded to 20 lb. per h.p. may or may not take off well in calm water, but in a bad sea they would stand little chance of getting above the hump speed. It is thus easy enough to obtain a good paying load per horse-power at the expense of general utility. For routes across open sea, I maintain that 17 lb. per h.p. is a power-loading which should not be exceeded, and in the appendices the machines are so arranged, that some idea of their serviceability in this respect may be obtainable."

On the suggestion of Mr. Manning, I would also emphasise that the weights I give for "paying load" represent the true revenue loads of passengers—they include neither crew, fuel, nor internal accommodation. Further, I would like to express the earnest hope that on this matter of crucial importance, we have ceased to indulge in loose and worthless comparisons, founded on such virtually irrelevant bases as "with tanks full."

For a number of machines of approximately the same general serviceability, the quantitative basis of comparison

is ton-miles per h.p. In this respect, I would submit that there are considerable advantages in the method adopted in the tables you publish of expressing this figure as lbs. of paying-load on a 300-mile flight, and lbs. variation in paying-load for each additional 100 miles. I note that Mr. Fokker is using as a basis of comparison in his monthly Propaganda Bulletins the co-efficient  $\frac{\text{load carried} \times \text{maximum speed}}{\text{normal h.p.}}$

It may be noted at first that this figure suffers from the usual slovenliness, to which I have referred above, but the point to which I do wish to draw attention is this subtle introduction of "speed" which, with the proviso of a certain minimum, is in almost the same position as "the flowers that bloom in the spring." Speed is already introduced once, because the slower the cruising speed of the machine, the more hours, and, therefore, the more lbs. of fuel will be required to fly a certain distance. It will be a long while before speed as such will rank equally with load carried per h.p. For the present, I think Mr. Fokker should be satisfied with the weight of fuel that his cleanliness in design enables him to transfer to paying load.

I regard this as a matter of some considerable importance, and I hope other designers will agree with me on this point sufficiently to express their views.

O. E. SIMMONDS.

Southampton.  
March 29, 1926.



### The R.A.F. Cairo-Cape Flight

THE four Fairey III D biplanes (Napier "Lions"), under Wing-Commander Pulford, R.A.F., have made steady progress in the flight from Cairo to Cape Town and back. Resuming the journey on March 25 the four machines left Broken Hill early in the morning and flew to Choma, where a short stop was made, and thence to Livingstone, having circled the famous Falls before landing. On March 29, they proceeded to Bulawayo, thence, on March 31, to Palapye Road, another 200 miles. After a day's stay at Palapye Road they flew another 250 miles to Pretoria, where they were given an enthusiastic reception, official and civic, being entertained at luncheon the next day (April 3) by the S.A. Air Force. On April 5 they continued on to Johannesburg, accompanied by 14 S.A. Air Force machines and the fifth Fairey IIID (which had arrived from England by sea and rail), piloted by Flying Officer Jones.

### Splendid Service by Napier "Lions"

THE following facts relating to the running of the Napier "Lion" engines used by Imperial Airways, Ltd., may be of interest. In all, there are 20 Napier engines in use by Imperial Airways. They have covered—installed in D.H.34 machines—an aggregate of over two million miles. One engine alone has nearly 200,000 miles to its credit, whilst seven others have run over 150,000 miles each. This is certainly a wonderful record of consistent reliability, which it will be difficult to equal, and says much, not only for the design, workmanship and material of the Napier "Lion," but also for the system of maintenance employed by Imperial Airways. Another interesting point is that the four new Handley Page machines which, as stated elsewhere, have just been put into service, are fitted with these same Napier engines which have already so much service to their credit.

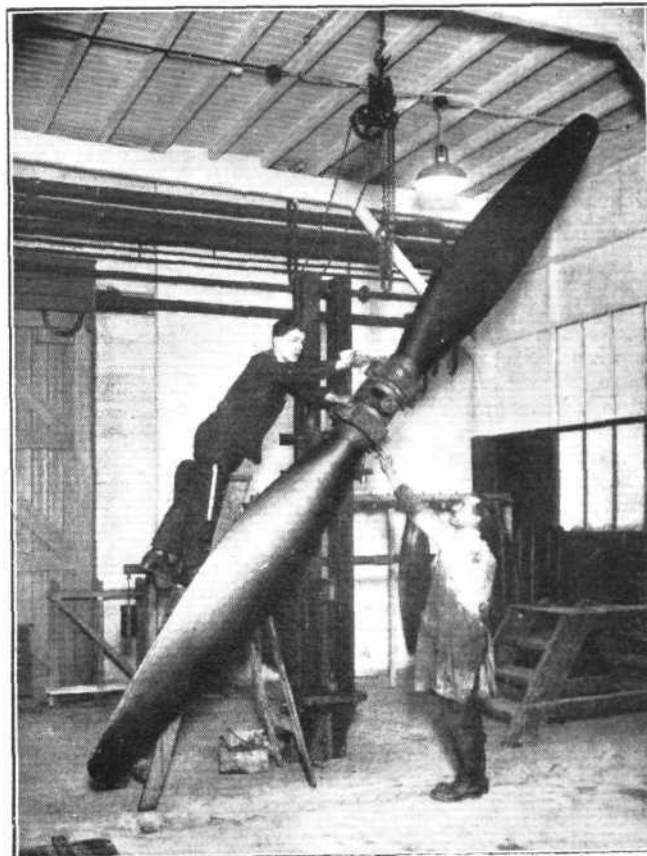
### The R.A.F. Safe

ON April 3, a safe, containing important official documents, was missing from the R.A.F. Coastal Area Base, Lee-on-Solent, and as a result all men on Easter leave from this station were recalled. On April 5, however, the safe was found among furze-bushes in the locality, unsuccessful attempts having been made to force it open.

### Scholarships for Flight Cadets

THE Air Ministry announces that Sir Charles Wakefield, Bart, C.B.E., has generously offered to continue the "Sir Charles Wakefield" Scholarships, founded by him in 1920, in view of the great assistance which has been provided by this benefaction, and the Air Council have gratefully accepted this offer. These scholarships are each of £75, tenable for one year at the R.A.F. Cadet College, Cranwell, and are intended to give financial assistance to successful candidates for entry into the College whose parents are in reduced

circumstances. Two scholarships are awarded at each half-yearly entry. One of these is awarded on the result of the open competitive examination for admission to the Cadet College held in June and November, and the other to one of the aircraft apprentices who, at the conclusion of their training at the R.A.F. training establishment at Halton are selected twice a year for Flight Cadetships at Cranwell.



**A 16-FT. METAL AIRSCREW:** The above illustration shows a pair of all-metal blades, constructed by Metal Propellers, Ltd., of Purley Way, Croydon, for the British rigid airship R.101. The complete airscrew, which is of the reversible type, measures 16 ft. in diameter, and is probably the largest metal airscrew yet constructed.



# THE ROYAL AERO CLUB OF THE U.K.

## OFFICIAL NOTICES TO MEMBERS

THE Annual General Meeting of the Club was held on Wednesday, March 31, 1926, Lieut-Colonel F. K. McClean presiding.

The Chairman in making a brief statement on the Club's activities during 1925, referred to the urgent necessity of largely increasing the Membership of the Club. The Club's main object was the furtherance of aviation, and the social side was purely a secondary object.

During the year the Club had distributed in prizes £1,670, and in addition had raised a fund of £1,000 towards the expenses of sending out the British Team to compete for the Schneider Cup.

The Club had also distributed £760 through the Flying Services Fund to dependents and for the education of children of those killed in the War.

The Duke of Atholl was unanimously elected President and the Duke of Sutherland Vice-President of the Club for the year 1926.

The following Members were elected to the nine vacancies on the Committee:—

Air Vice-Marshal Sir W. S. Brancker, K.C.B., A.F.C.  
Ernest C. Bucknall.  
Lord Edward A. Grosvenor.  
Major Harold Hemming, A.F.C.  
E. J. B. How.  
Colonel F. Lindsay Lloyd, C.M.G., C.B.E.  
Lieut.-Colonel J. T. C. Moore-Brabazon, M.C., M.P.  
Lieut.-Colonel M. O'Gorman, C.B.  
Air-Commodore C. R. Samson, C.M.G., D.S.O., R.A.F.

Offices: THE ROYAL AERO CLUB,  
3, CLIFFORD STREET, LONDON, W. 1.

H. E. PERRIN, Secretary

## LIGHT 'PLANE CLUB DOINGS

### London Aeroplane Club

THE total flying during the month of March was 230 flights in 80 hours 25 minutes. This total is made up as follows:—

	Flights	Hours	Minutes.
Dual .. .. .	172	64	5
Solo .. .. .	29	9	50
Test .. .. .	26	4	15
Joy riding .. .. .	3	2	15

All these flights were carried out on the one D.H. "Moth" G-EBLI.

For the week ending April 4 the flying time was 22 hours 50 minutes.

The following members had dual instruction:—G. Quirk, A. R. Ogston, J. H. Saffery, W. Hay, B. Tucker, R. Thomas, Sir John Rhodes, K. V. Wright, N. J. Hulbert, A. Lees, J. Barros, Miss O'Brien, E. P. Brough, R. L. Hare, R. Malcolm, Mrs. Atkey, G. Wallcousins, T. H. O. Richardson, S. O. Bradshaw, E. D. Moss, F. S. Adams, R. C. Presland, J. S. M. Michie, R. P. Cooper. The following members flew solo:—Squad-Leader M. E. A. Wright, Maj. K. M. Beaumont, Mrs. Elliott-Lynn.

Maj. K. M. Beaumont, and Squad-Leader M. E. A. Wright have been elected to the committee of the club.

The club has still to raise £100 to complete the purchase of the third D.H. "Moth." Members wishing to subscribe are requested to send in their names either to Stag Lane, or 3, Clifford Street. It is hoped to take delivery of the machine on the 20th inst.

Mrs. Elliott-Lynn, N. H. Jones, and D. Kittell, who now own D.H. "Moths," have put up many hours flying during the Easter week-end.

Members will be glad to know that Capt. F. G. M. Sparks is much better and will be back to duty very shortly.

### The Lancashire Aero Club

FLYING took place on Wednesday, Thursday, Saturday and Sunday. Machines in use GEBLV and GEBLR. Mr. Stack gave dual instruction to: W. Colley, 1 hour 10 mins.; P. Michelson, 1 hour 10 mins.; F. Gattrell, 1 hour; R. Williams, 50 mins.; C. Brown, 50 mins.; C. Agar, 50 mins.; D. Tummers, 40 mins.; A. Menzies, 40 mins.; A. Macnair, 30 mins.; A. Barnes, 30 mins.; J. Leeming, 30 mins.; S. Crabtree, 30 mins.; Dyson (D), 30 mins.; T. Prince, 10 mins. Total 9 hours 50 mins.

Mr. Scholes gave instruction to: J. Leeming, 45 mins.; D. Dyson, 35 mins.; S. Crabtree, 25 mins.; R. Williams, 5 mins. Total 1 hour 50 mins.

Solo flights were made by B. Smith, 2 hours 20 mins.; M. Lacayo, 45 mins.; R. Williams, 20 mins.; J. Leeming, 20 mins.; S. Crabtree, 10 mins. Total 3 hours 55 mins. Tests 1 hour 5 mins. Total time of machines in air, 16 hours 40 mins.

On Thursday Mr. B. Smith made the required flights for his pilot's certificate.

He has done just 11 hours flying from the first time he went up to the conclusion of his "Licence" flights.

On Sunday Mr. S. Crabtree made his first solo flight, appeared perfectly competent in the air and landed excellently.

### The Newcastle-upon-Tyne Aero Club

REPORT for week ending April 4. Total time flown during the week, 16 hours 15 mins., made up of dual—14 hours (under Major Packman), solo—"A" pilots—1 hour 45 mins. Passenger—15 mins., test 15 mins.

The following members flew under instruction:—Mrs. Marcks, Miss Leathart; Messrs. Middleton, Whitfield, George, W. Todd, J. Bell, C. Thompson, R. N. Thompson (secondary dual), Leech, Irving, Palmer and Sandilands.

Mr. R. N. Thompson flew with Mrs. Marcks as passenger and Mr. Baxter Ellis took up Mr. and Mrs. H. Ellis and Mr. T. Todd.

Major Packman flew with Mrs. Buscarlet as passenger. One 15 mins. test flight.

It was very unfortunate that on Friday mid-day a mishap should have occurred, putting the only machine in use off service for the remainder of that day and until Saturday evening. Mr. R. N. Thompson, always regarded as the Club's most careful pilot, miscalculated slightly when landing, breaking a wheel and gently turning the machine over on to its back. As is usual in such cases, this took place in the farthest corner of the aerodrome. However, there was a good turn up of members, so that there were plenty of willing hands available, and the machine was back into the hangar in a very short time. The only spare required which was not available was a rudder, and Major Packman got on to the telephone right away in an effort to obtain one. The Lancashire Club very kindly offered to supply one from a machine. Owing to holidays it was not safe to trust to having this forwarded by rail, so Mr. J. Edmundson set off for Manchester, accompanied by Major Packman, to bring the rudder up, leaving Cramlington at about 5 p.m. and returning at 6.30 a.m. on Saturday. Meanwhile, Mr. Brown had a team at work assisting him to make the necessary replacements, up to a late hour, fitting a new axle, centre section, cylinder head, cowling, etc. Work was re-commenced on Saturday morning, with the result that the machine was being tested by Major Packman before 5 p.m. on Saturday. Considering that the machine had to be almost completely dismantled, this was a very good performance.

Straight flying on the Gull had been carried out during the week, and on Sunday Mr. Ellis made a large circuit. Half-way round on a second attempt, he came down with engine trouble. This was speedily rectified and after a party had lifted the machine over a few hedges into a more suitable field, he flew back to the aerodrome. The familiar "tin" nose of the Gull was converted into a concertina during the operations, and the last part of the flight was made with the nose of the fuselage, about one square foot in area, quite open. No doubt this kept the pilot cool.

Hot or cold! The extraordinary success with which the Armstrong-Siddley "Jaguar" air-cooled engine functioned at temperatures in the neighbourhood of 110°F. during Cobham's recent London-Cape Town flight is still fresh in everyone's mind. The accompanying illustration is therefore particularly interesting inasmuch as it shows that this remarkable engine is equally at home at the other extreme. It depicts an "A.-W. Siskin" on which Lieut. Luneberg, of the Swedish Flying Corps, made a successful test in the far north of Sweden, with a temperature below 60° of frost, and then made a flight of 800 miles to the south of Sweden.





# THE ROYAL AIR FORCE

London Gazette, March 30, 1926.

## General Duties Branch

Flight-Lieut. P. J. Clayson, M.C., D.F.C., is granted a permanent commn. in this rank; Jan. 1. The following Pilot Officers are promoted to rank of Flying Officer:—C. W. Martin; Feb. 8. G. D. Middleton, A. E. Haes, A. G. Pickering; Feb. 15. The following Pilot Officers on probation are confirmed in rank:—L. R. Mizen, A. W. L. C. Allen, H. T. Andrews, J. W. Bayes, A. M. N. David, T. O'N. East, C. S. Horne, H. A. Howes, W. F. Lovering, C. R. McEvoy, E. A. Swiss, A. E. Taylor, E. M. Thompson, F. B. G. Walker; March 12. S. A. Thorn; March 21.

Group Capt. M. G. Christie, C.M.G., D.S.O., M.C., is placed on half-pay, Scale A; April 1. Flight-Lieut. M. G. McL. Cahill-Byrne is placed on retired list on account of ill-health; March 31. The following Flying Officers are transfd. to Reserve, Class A:—P. K. Campbell, A. B. Cree, E. S. Edwards, C. Gardner; March 29. H. S. C. Bassett, S. H. G. Trower; April 1. Flying Officer B. C. Duke relinquishes his short service commn. on account of ill-health; April 1. Pilot Officer on Probation G. H. C. Keay resigns his short service commn.; March 31.

## Stores Branch

Flying Officer C. W. Rugg is granted a perm. commn. in this rank; March 31. Flying Officer C. P. Wingfield is confirmed in his appointment in Stores Branch and is granted a permanent commn. in this rank; March 31. Pilot Officer A. J. Walker is confirmed in his appointment in Stores Branch and is promoted to rank of Flying Officer and is granted a permanent commn. in this rank; Feb. 10.

## ROYAL AIR FORCE INTELLIGENCE

**Appointments.**—The following appointments in the Royal Air Force are notified:—

### General Duties Branch

*Air Commodore* E. R. Ludlow-Hewitt, C.M.G., D.S.O., M.C., to R.A.F. Staff College, Andover, supernumerary, pending appointment as Commandant; 28.3.26.

*Wing Commanders* F. H. Unwin, O.B.E., to No. 7 Group H.Q., Andover, for Tech. Staff duties; 1.4.26. R. Leckie, D.S.O., D.S.C., D.F.C., to H.Q., Mediterranean, supernumerary, pending posting for duty as Senior Air Force Officer in H.M.S. *Hermes*; 16.3.26.

*Squadron Leaders*: A. F. Somerset-Leeke to No. 1 Sch. of Tech. Training (Apprentices), Halton; 22.2.26. T. E. B. Howe, A.F.C., to H.M.S. *Furious*; 1.9.25. K. M. St. C. G. Leask, M.C., to No. 24 Sqn., Kenley; 25.3.26.

*Flight Lieutenants*: J. W. Hosking, M.B.E., to R.A.F. Reception Depot, West Drayton; 5.4.26. W. F. Dickson, D.S.O., A.F.C., to R.A.F. Staff College, Andover; 15.3.26. G. C. O'Donnell, D.F.C., to No. 1 Sch. of Tech. Training (Apprentices), Halton; 1.4.26. A. G. Jones-Williams, M.C., to No. 100 Sqn., Spittlegate; 30.3.26. C. W. Hill, to Station H.Q., Andover; 1.4.26. T. Henderson, M.C., A.F.C., to No. 58 Sqn., Worthy Down; 6.4.26. H. C. Irwin, A.F.C., to R.A.F. Depot; 19.3.26. H. W. St. John, D.F.C., to H.M.S. *Furious*; 1.9.25. E. B. Grenfell, A.F.C., to Air Ministry; 6.4.26. F. F. Garraway, to No. 2 Wing H.Q., India; 24.2.26.

*Flying Officers*: A. W. Crees, to No. 2 Armoured Car Co., Palestine; 25.2.26. F. H. Astle, to Armament and Gunnery Sch., Eastchurch, instead of to Station H.Q., Spittlegate, as previously notified; 1.3.26. (Hon. Flight-Lieut.) R. Kennedy to R.A.F. Depot, on transfer to Home Estab.; 17.3.26. A. D. McDowall, to Station H.Q., Spittlegate; 9.3.26. W. F. Dry, to Aircraft Depot, India; 19.3.26. E. A. C. Britton, D.F.C., to No. 43 Sqn., Henlow; 6.4.26. S. J. Sneath to No. 1 Wing H.Q., India; 24.2.26. G. C. B. Bernard-Smith, to No. 2 Sqn., Manston; 29.3.26. T. H. J. Wright, to No. 13 Sqn., Andover; 29.3.26. F. E. R. Dixon, M.C., to Aircraft Park, India; 26.2.26. C. W. L. Trusk, to No. 27 Sqn., India; 8.2.26. A. C. Meredith and (Hon. Flight-Lieut.) H. T. Herring, to H.M.S. *Furious*; 1.9.25. (Hon. Flight-Lieut.) D. J. Stewart, to No. 4 Sqn., S. Farnborough; 6.4.26.

*Pilot Officers*: A. R. Feather, to No. 55 Sqn., Iraq; 19.3.26. G. N. Hoar,

## Accountant Branch

Pilot Officer on probation G. Goodall is confirmed in rank and is promoted to rank of Flying Officer, with effect from Feb. 23, and with seny. of Nov. 10, 1925.

## Medical Branch

Flying Officer A. Dickson, M.B., is granted a perm. commn. in this rank; March 31.

## Chaplains' Branch

The Rev. D. H. Gillan, M.A., B.D., relinquishes his short service commn. on ceasing to be employed and is appointed an hon. Chaplain to R.A.F.; April 1.

## Reserve of Air Force Officers

A. W. Lindsay is granted a commn. in Class BB, General Duties Branch, as a Pilot Officer on probation; March 30. Flying Officer C. R. McMullin is confirmed in rank; March 22. The following Flying Officers are transfd. from Class A to Class C:—D. W. Forshaw; March 18. J. J. Comerford; March 26. L. W. Allen; March 30. C. H. Bird; March 30. W. I. Hannon; March 30. Flight-Lieut. B. C. Meates relinquishes his commn. on completion of service and is permitted to retain his rank; March 22. The following Flying Officers relinquish their commns. on account of ill-health, and are permitted to retain their rank; March 31—J. C. Bulteel, G. H. E. Roxburgh. The commn. of Pilot Officer on probation T. Salway is terminated; March 30.

to No. 8 Sqn., Iraq; 19.3.26. J. W. M. Nancarrow, to Aircraft Depot, India; 19.3.26. L. A. Walsh, to No. 25 Sqn., Hawkinge; 6.4.26.

## Stores Branch

*Flight Lieutenant* W. R. P. Allen to R.A.F. Depot, Egypt; 8.3.26. *Flying Officers*: E. P. Terry, to No. 4 Stores Depot, Ruislip; 1.4.26. M. W. Keay, to Aircraft Depot, India; 19.3.26.

## Accountant Branch

*Flight Lieutenant*: R. F. C. Metcalfe to Superintendent of R.A.F. Reserve, Northolt; 1.4.26. *Flying Officer*: C. G. Prior to No. 41 Sqn., Northolt; 29.3.26.

## Medical Branch

*Squadron Leader*: H. L. Burton, M.B., to H.Q., Iraq; 18.3.26. *Flying Officers*: J. P. Hederman, E. J. Mockler, M.B., and M. J. Marren, M.B., to R.A.F. Depot, Uxbridge, 18.3.26.

## NAVAL APPOINTMENTS

The following appointments were made by the Admiralty on March 25:—

*Lieutenants* (Flying Officers, R.A.F.).—A. B. B. Foulerton, to *Columbine*, and for flying duties in No. 405 Flight; J. F. M. Robertson and N. H. Portal, to *Columbine*, and for flying duties in No. 406 Flight; A. N. R. Keene, to *Victory* and for flying duties in No. 442 Flight; C. R. Townsend and L. G. Richardson, to *Furious*, and for flying duties in Nos. 443 and 462 Flights respectively; April 6.

*Lieutenant*, E. (Flying Officer), R.A.F.—D. H. Tollemache, to *Furious*, and for flying duties in No. 443 Flight; April 6.

## Royal Marines

*Major*: C. H. Coode, to *Curacao* (date of joining). *Lieutenants* (Flying Officers, R.A.F.).—R. C. Giles and K. Hunt, to *Columbine*, and for flying duties in Nos. 405 and 406 Flights respectively; and G. H. Morris, to *Furious*, and for flying duties in No. 443 Flight; April 6.

## IN PARLIAMENT

### Air Ministry

Sir N. MOORE, on March 29, asked the Financial Secretary to the Treasury why temporary ex-service contracts officers in the directorate of contracts, Air Ministry, are receiving notice of discharge; and is it proposed to discharge all such temporary contracts officers?

Sir Samuel Hoare: I have been asked to reply. It was decided in 1922, as part of the re-organisation of the Air Ministry, to amalgamate the old directorate of aircraft supplies with the contracts directorate and to grade the bulk of the staff of the new directorate as executive under the terms of the report of the Committee on the organisation of the Civil Service agreed to between the official and staff side of the National Whitley Council. The members of the temporary staff of the directorate of aircraft supplies were offered, and accepted, temporary employment in the reorganised establishment. Certain of these officers are consequently filling posts which are appropriate to established civil servants of the executive class, by whom they are gradually being replaced, but steps have been taken to find other employment under the Air Ministry for the temporary officers displaced wherever possible.

### Airship R.101

MR. WELLS, on March 31, asked the Secretary of State for Air when it is proposed to start the building of the airship R.101?

Sir Samuel Hoare: Certain preliminary constructional work on the power cars and internal structures for R.101 is now proceeding. The erection of the hull cannot begin until delivery by the contractors of the necessary girders. Work on the contract is in hand, and delivery should commence in the summer.

### R.A.F. Territorial Squadrons

CAPT. CROOKSHANK asked what progress has been made with regard to the recently created Territorial Air squadrons?

Sir S. Hoare: Four Auxiliary Air Force squadrons have been formed in conjunction with the Territorial Associations of the City of London, the County of London, the City of Glasgow and the City of Edinburgh. Aerodromes, necessary buildings, aircraft and equipment have been provided for these

squadrons. City headquarters, including offices, a drill hall, and facilities for technical training, have been, or are being, provided for each squadron, and recruiting is in progress.

Mr. Thurtle: Could the right hon. gentleman say whether these squadrons are bombing squadrons or fighting squadrons?

Sir S. Hoare: They are bombing squadrons.

### Brennan Helicopter

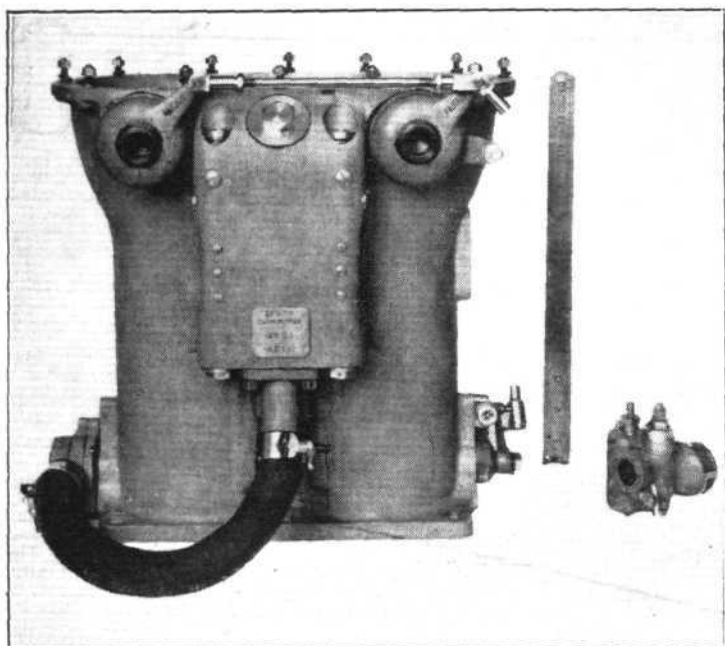
MR. G. HARVEY asked the Secretary of State for Air (1) if he is in a position to state what is the total cost of the Brennan helicopter, apart from the £50,000 paid to the inventor, in the shape of material and labour borne by the Royal Aircraft Establishment at Farnborough; (2) what has become of the Brennan helicopter; and has the inventor been allowed to take it away or does it remain the property of the Government?

Sir S. Hoare: As regards the first question, the sum of £55,000, which I have stated to be the total amount expended on the Brennan helicopter experiments at the Royal Aircraft Establishment, Farnborough, was not all paid to the inventor, but includes £40,000 representing the cost of labour, materials and establishment charges at the Royal Aircraft Establishment, and £7,000 for salaries of the design staff working under Mr. Brennan. As regards the second question, in view of the decision not to incur further expenditure upon the Brennan helicopter, the damaged machine has been offered to the inventor.

### Royal Navy and Flying Risks (Insurance)

MR. HARRISON asked the First Lord of the Admiralty, seeing that naval officers are undertaking duties necessitating their presence in the air, whether he will be able to obtain for these officers, so long as they undertake such duties, the same facilities for life insurance as those recently offered to officers in the Royal Air Force undertaking similar duties?

Mr. Davidson: I have reason to believe that naval officers are able to insure their lives on terms not less favourable than those recently offered to officers in the Royal Air Force, notwithstanding that they may be subject to flying risks during a portion of their service.



**IS THIS THE LARGEST CARBURETTOR?** We show above a carburettor constructed by the well-known Zenith firm, at their factory in England, for a new 1,500 h.p. aero engine. Some idea of its size may be gathered from the 12-in. rule and the small motor-cycle type carburettor placed alongside.

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#### Madrid-Manila Flight

THREE Spanish airmen, Capts. Rafael Martinez, Eduardo Gonzalez, and Joaquin Loriga, left Cuatro Vientos aerodrome, Madrid in three Breguet machines in an attempt to fly to Manila.

#### The Slotted Wing in Germany

A NEW commercial aeroplane has just been completed by the famous German aircraft firm the Albatros Works of Berlin-Johannisthal in which leading edge slots and slotted ailerons are incorporated. The machine has been designed as a newspaper carrier and ordered by the well-known publishing firm Verlag Ullstein. Dr. Ing. Gustav Lachmann, who invented the slotted wing in Germany simultaneously with its invention by Mr. Handley Page in this country, has been mainly responsible for the design of the new Albatros machine, which is known as the type L. 72a, and is fitted with a 220-h.p. B.M.W. engine. Although carrying a wing loading of over 11 lb./sq. ft., the Albatros L 72a is claimed to land at about 47 m.p.h., so that the slotted wings seem to give a lift coefficient of about 1 in "absolute" units. The machine is a single-bay biplane of fairly large span, and is generally of very clean design.

#### British to Welcome Commandante Franco

IN connection with the arrangements made to welcome Commandante Franco upon his return to Spain after his wonderful exploit in flying to South America, two British representatives have left London for Madrid. They are taking with them messages to Commandante Franco, from Sir Samuel Hoare, the Secretary of State for Air, and the Royal Aero Club of Great Britain. In addition, they are conveying to Commandante Franco and the other participants in this epoch-making flight, presentations from D. Napier & Son, Ltd., the makers of the engines fitted to the "Plus Ultra."

#### Mrs. Elliott-Lynn's Parachute Drop

MRS. ELLIOTT-LYNN, the energetic lady member of the London Aeroplane Club, made a successful parachute drop from an aeroplane at Hereford on April 3. When attempting this feat the day previous, the machine carrying her developed engine trouble just as she was about to jump, and had to make a forced landing, with Mrs. Elliott-Lynn still clinging to the side of the aeroplane.

#### R.A.F. Flying Accident

THE Air Ministry regrets to announce that as a result of an accident at Quetta, India, to a Bristol Fighter of No. 28 Squadron, Quetta, on March 31, Flying Officer Reginald John Willson, the pilot of the aircraft, and No. 344845 L.A.C. Arthur John Burgess, were both seriously injured and died shortly afterwards.

#### PUBLICATIONS RECEIVED

*Condor Engine (Series III). Air Publication 1158. First Edition. March, 1926. H.M. Stationery Office, Kingsway, London, W.C.2. Price 4s. net.*

*Official Gazette of the U.S. Patent Office. March 9, 1926. Vol. 344, No. 2. The United States Patent Office, Washington, D.C., U.S.A.*

*Fortschritte der Luftfahrt, Jahrbuch, 1926. By Dr. Ing. W. v. Langsdorff. H. Bechhold Verlagsbuchhandlung, Niddalstrasse 81-83, Frankfurt a.M., Germany. Price 24 marks.*

*The Canadian Patent Office Record and Register of Copyrights and Trade Marks. Annual Index, Vol. LIII. Canadian Patent Office, Ottawa, Canada.*

*Canadian Patent Office Record. Vol. LIV. Nos. 11 and 12. March 16 and 23, 1926. The Canadian Patent Office, Ottawa, Canada.*

*Official Gazette of the U.S. Patent Office. March 16, 1926. No. 3. Vol. 344. United States Patent Office, Washington, D.C., U.S.A.*

*L'Indicateur Aérien. No. 59. March 1, 1926. Official Organ of the International Air Traffic Association. G. Roche d'Estrez, 5, rue de l'Isly, Paris. Price 2 fr.*

*La Technique Aéronautique. No. 33. G. Roche d'Estrez, 5, rue de l'Isly, Paris. Price 2-50 frs.*

#### Catalogue.

*Froude Hydraulic Dynamometers and Heenan-Fell Air Brake Dynamometers. Heenan and Froude, Ltd., Worcester.*

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#### NEW COMPANIES REGISTERED

THE CIERVA ANTOGIRO CO., LTD.—Capital, £125,000, in £1 shares (50,000 8 per cent. participating preference and 75,000 ordinary). Acquiring any invention in relation to the manufacture, application and use of flying machines of the Cierva Autogiro type, or of any other kind, or of any apparatus therefor, in particular to acquire the benefit of certain existing inventions from Juan de la Cierva, manufacturers of and dealers in aircraft of all kinds, Solicitors, Linklaters and Paines, 2, Bond Court, Walbrook, E.C. 4.

STEEL WING CO., LTD., Nightingale Grove, Hither Green, S.E.13.—Capital £15,000, in £1 shares. Manufacturers of and dealers in aeroplanes, balloons, and flying machines of all kinds, etc., to acquire the business carried on by D. J. Mooney at Nightingale Grove, Hither Green, S.E.13, as the Steel Wing Co., 1921, and certain patents for inventions in connection with aeronautics or other subjects, the property of the said vendor. Directors: D. J. Mooney, D. H. Emby, H. Burroughs, Sir John Mooney, K.B.E. D. J. Mooney is permanent managing director and chairman.

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#### AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

#### APPLIED FOR IN 1925.

Published April 8, 1926

- 5,055. R. H. RICARDO. Internal-combustion engines. (248,909.)
- 5,731. S. E. SAUNDERS. Seaplane floats. (248,916.)
- 13,469. A. TAMMEO, E. CAMINADA, P. FOPPIANO, and C. SCOTTI. Aeroplanes, and means for increasing their stability. (236,179.)
- 15,177. R. P. PESCARA. Direct-acting internal-combustion motor compressors. (235,581.)
- 27,758. A. ROHRBACH. Aircraft rudder. (242,973.)
- 28,186. SOC. ANON. NIEUPORT-ASTRA. Aerial propellers. (246,801.)
- 32,852. M. G. ROSENTHAL. Rotary engines. (249,053.)

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